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ABSTRACT

This paper centers on research on the development of a sense of time, and particularly, the meaning of the concept of time, children's development of the concept, and the relation of the concept to children's academic achievement in kindergarten and first grade. Discussion first focuses on two background perspectives: (1) the problem of educating black children in U.S. inner cities; and (2) an anthropological-ecological approach to the study of human environments and groups. Longitudinal research that involved a sample of black mothers and children from impoverished, overcrowded areas in Chicago is then presented. Mothers who gave birth in two major metropolitan hospitals were included in the sample if they were adolescents or had been so at the birth of their first child. Mothers and infants were videotaped at birth and at various intervals for a six-year period after birth. Data on mothers and infants also included life histories of mothers, medical and work histories, and first-hand knowledge about friends, moves, drug problems, and other experiences. Most mothers did not talk about time to their children. Among those that did, increased talk about time was associated with increased seriation task scores. Concluding discussion concerns implications of the findings for schools and early intervention programs with young, black inner-city families. References are included. (RH)

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Sense of Time: Its Relationship to Achievement

Today I've been asked to present on my research on the development of a sense of time: the meaning of the concept of time, how children develop it and how it may relate to their early academic achievement in the kindergarten and first grade. However, before talking about time, I want to set out two perspectives as background for this presentation. The first is a social issue that seriously disturbs us all: the problem of educating black children in the inner cities of the United States. I then want to share with you briefly the perspective I use to guide my research on the sense of time that prevents the research from penalizing the black children being studied. I will then talk about my research using a longitudinal sample of black children from birth to age six, living in some of the most impoverished, overcrowded areas in Chicago. I'll conclude with the possible implications of the findings for schools, and for early intervention programs with young black inner city families.

First, as you all know, the problem of educating disadvantaged black children is an vital issue. A recent issue of the NBCDI Black Child Advocate (1989) estimates that 40 per cent of black youth are functionally illiterate.

Educational failure begins early for many of our children. A disproportionate number of them in inner city schools enter first grade far behind their contemporaries in any other socioeconomic and racial group. Many of the children fail in the early grades, and we know that early school failure correlates highly with drop out rate in high school. High school drop-out means lowered capacity, and limited opportunity to obtain and hold employment--to have the options to "realize the dream" mentioned in the theme of this conference. The research I want to present today may have implications for teasing out some of the subtle differences which are important in the education of black children. Differences of which we may

not be aware because most child development research does not investigate the natural routine interaction of black children's lives but compares them with criteria based upon studies of middle class, primarily white, families (Bradley & Caldwell, 1976; Deutsh, et. al., 1968; Hess & Shipman, 1965; Tulkin, 1977).

I come to research from an anthropological-ecological approach. This approach simultaneously stresses the variation in individual human environments, as well as the common goals of all societies and human groups. Based upon anthropology and ecology, it prevents one from blaming the victim, or automatically attributing pathology to those being studied.

Anthropologists, such as Clifford Geertz, suggest that all human societies or groups set up control mechanisms or plans to carry out those patterns of behavior needed for the survival of their particular society (Geertz, 1973). One of the most universal of these mechanisms is the prescribed relationship between adults and children. For example, all societies entrust their newborn to some form of the family to prepare them to grow into competent adulthood within their own social group. The key words in what I have just said are "prepare them to fit into their own social group." This means parents prepare their children to function in a specific society...the one in which they live daily. Child rearing interactions grow out of the parent's knowledge about life in their community, what they believe will be useful, and what they know as realistic aspirations for their children when they grow up.

This family socialization works well when the society is relatively alike. However, in a highly diverse society of many racial and ethnic groups and rapid institutional change, such as the United States, a family's immediate environment may not match that of the larger society. Parents cannot teach the rules and tools of the major society on all dimensions to their children if their own own experiences are segregated to the world of their immediate family and community. This is especially true if their communities are separate and isolated--historically, socially, economically and often physically. Families cannot teach what they do not know. Nor do any parents, being adaptive human beings, teach what is not useful in their environment.

Let me quickly give you give you an illustration of this disjuncture between the early sociocultural environment and the requirements of the larger society when a child comes to school.

An inner city kindergarten teacher, interviewed in my research, had been recently transfered from a very poor inner city school to a primarily white school in a very well-to-do, luxurious neighborhood of apartments. Much to her surprise when she lined up her new charges by the stairs, to go down to the play yard, they all went tumbling down like a set of bowling pins. Each time she lined them up, the same thing happened. The necessary motions to negotiate the stairs were simply not there. An experienced teacher, who had taught for many years in the inner city, she had met five year olds who did not speak English, who did not know their ABC's, who hardly knew their name...but never any who didn't "do stairs." Assuming that most five year olds without a physical handicap could develop this type of locomotion, she looked into the social/physical context of their background, ordered a set of play stairs for her room, and began to teach them. You've probably guessed by now that she found out that her highly privileged little students did not know stairs because they lived in very luxurious high rise apartments, with working elevators, and "doing stairs" was not a part of their daily lives.

This illustrates the perspective that I am trying to set. All human families raise their children to fit into the society in which they live and know, and children in each society are not taught things which are not useful in their environment. The children did not know stairs because stairs were not necessary in their environment. These children could be thought of as "disadvantaged," because they were not exposed to a practice very common in the wider environment; or they could be labeled "deficient" in their ability to learn stairs, and nothing done about it, because after all, their societal group is one not known for its "rhythm." However, this teacher did not write the children off, but ferreted out the problem, and put extra curricular attention in this area, based upon valid knowledge of the children's early environment, and in less than a month, they were as agile as their contemporaries.

Early life in various family groups in a pluralistic society may not teach all children the importantdimensions needed to negotiate in the larger society. Unfortunately, the cost to many inner city black children is far more costly than not being able to "do stairs."

I mentioned earlier that systematic information over time on the natural experiences of black children, especially lower socioeconomic children, is not in the general knowledge base. A more precise characterization of these children's early environment is needed if we are to have valid information upon which to build effective parent-child programs, and upon which to structure curriculum that will close the gap between home and school. I am particularly interested in comparing the child rearing practices of mothers whose children do well in school with those who do not succeed. Understanding these differences within the same population will be far more helpful in developing successful programs responsive to the children's "world view" rather than basing programs on groups from very dissimilar backgrounds.

Using a semi-ethnographic method, I have videotaped the interaction of a sample of children with their families in their home environment over the past six years, in an attempt to document and describe their early environment, and the context of their development in low-income inner city neighborhoods. Taking the camera into the home meets the ecological/ anthropological requirements approach I described earlier, because it gives the researcher insights into the social contextual environment of the children; the factors that intertwine with and influence human development.

My sample was recruited from two major metropolitan hospitals. Mothers giving birth were included if they were adolescents, or had been at the birth of their first child; and (since we wanted children at the highest risk), if the mothers were living in census tracts that were below the Chicago median on per capita income and housing value, and above the median rates of transience, crime and neonatal mortality. All of these criteria increased the potential for high environmental risk.

We videotaped the mothers and the child in the hospital on the second day after the children's birth, then in their homes at regular six week intervals during the first year, then every three months from age two, and finally twice a year after age three. The camera remained on the target child for up to four hours of taping, since we reasoned that few people, especially young children, could "put on an act" for that long.

We began with 37 infants, and now six years later, have a sample of 26-- a loss of eleven over a six year period. In addition to the videotapes, we have life histories on the mothers, transcripts on off-camera activities, medical

histories, work histories, and first hand knowledge about friends, moves, drugs problems and even happy times. This process has given us an extraordinary window on these children's daily lives.

Although the study examines several critical cognitive areas associated with school success, today's discussion will be confined to how the children's early environment relates to preparation for early school on one essential cognitive tool: the dimension of time. My interest on the development of a sense of time was prompted by two studies, one by anthropologist Peggy Brice-Heath (1984), the other by psychologists Craig Ramey and Dale Farran (Ramey, Farran & Campbell, 1979). Their studies implied that many lower income black children seemed to encounter a time structured environment for the first time in kindergarten or a preschool program. I remembered our tapes where many of the mothers and children seemed to be drifting through the day with no reference to time, with the sequence of time probably reckoned only by the parade of soap operas across the TV screen.

I began to wonder... how important is the concept of time in our early lives? What could happen in an early classroom where much of the day is slotted into a time for juice, a time for math, a time to play...if children had little or no structure in their pre-school lives? Children who have not had exposure to time dimensions earlier at home may not know how to connect events through time and govern their behavior at one point in time in relation to another point in time.

These questions led to another question that must be answered first. What is time? And why is it so important to human beings?

Suppose I were to ask you, "What is time?" If an answer does not come to you immediately, you are in good company. Even St. Augustine could not answer the question. When asked many centuries ago, he replied "I know what it is, but if someone asks me, I cannot tell him" (Augustine, 1953, xi, p.14). You probably feel the same way. Time is so unconsciously interwoven in the tapestry of your daily lives that it is difficult for you to step aside and reflect cognitively on it as a concept. You shape your lives by your calendars and your watches. For example, you were due here at 10:30 A.M, and you planned your behavior and actions earlier this morning (the past), with this seminar in mind (the future). Now, that you are here (the present) you have clear expectations about how long I will speak, and how long you will be here, because what you do later this afternoon (the future) is clearly

related to this period of time (the present). You understand the sequence and the importance of ordering your behavior at one point in time if you are to attain your desired goals at another point in time. This is the concept of linear time--being aware of the sequence and relationship of time--what we know as the past, present and future. You understand time, but what is it?

Philosophers over the centuries have linked knowledge of time to awareness of change (Campbell, 1986; Fraisse, 1964; Friedman, 1982b, Kant, 1956; Newton 1971; Plato, 1965). Human beings know that time exists because we see continuous change about us. The seasons change from winter to spring; night fades to day. Children grow. We see these changes, hold them in our memory, and note their sequence. On the basis of this kind of thinking, we then make premises about what is going to happen, and we order our actions around these premises. Change, then, is the basis for our understanding of time. Through awareness of change, we know that a period of time has passed.

How then, do child develop a sense of time? Although there is no comprehensive theory about how children develop a sense of time, child development researchers, are very sure that this sense begins in the very early caretaking routines between the family and the baby (Allen, 1975; Campbell, 1986; Clark, 1973; Fogel, 1977; Fraisse, 1982; Friedman, 1977, 1982a; Harner, 1981a, 1981b, 1982, 1976; Kaye, 1977; Levin & Gilat, 1983; Piaget, 1969; Ramey et. al., 1979; Spencer, 1985). One example of such a care-taking routine is in the early pause-burst pattern of nursing that usually occurs between caretakers and babies. For example, when babies launch into a burst of nursing, mothers are usually quiet and still, but when the babies pause, the mothers go into action and talk to and stroke the babies. The mothers become quiet again when the baby resumes nursing. Researchers believe that this sensitive, responsive, alternating behavior between the caretaker and the baby fosters awareness of "change" and sets the foundation for understanding time (Kaye, 1977; Scheffer, 1977; Stern et. al, 1977; Tronick, 1986).

Language also plays an important role in developing a sense of time. Humans can share the present without language, by observing something at the same time. However, the past and the future have no common visible, external reality, and we cannot share them without some language or recorded communication. I cannot know what you did before you came to this room unless you tell me.

Not only is the use of language about time vital to the child's growing understanding of temporal order, but the type of time spoken about is also important. Time has been historically divided into two types: physical and social time (Aristotle, 1961; Augustine, 1953; Friedman, 1982; Gubrium, 1976; Kant, 1951; McGrath & Kelly, 1986; Newton, 1971). Physical time is more quantitative, and objective. It is measured in relatively absolute and collective units such as clock time, weeks, years , yesterday and so forth. It is more universal. For example, "We will go at two o'clock" has meaning for all of us. We all know what 2 o'clock is.

The second category of time is social time. This is the more qualitative view of time. It is more "relational, subjective, and dependent upon the particular social situation." For example, "We will go after Daddy leaves." The "going" depends on the particular situation, and there is no universal understanding (Fraisse, 1964; Fraser, 1972; Halliday, 1986; Orme, 1969).

I need to stress here that physical time is the time most used in modern, technological societies such as the United States. Therefore, it is also the language of the schools.

Our early findings show that children whose mothers mention time in their talk about daily activities score significantly higher on seriation tests, which measure beginning time concepts, than children whose mothers who talk less, or not at all, about time. Mother's language about time, at least in our sample, does seem to relate to the children's beginning development of a time sense.

Despite this finding supporting the importance of time language, most of the mothers we studied do not talk about time to their children. In one analysis of mother's time statements made to children, only 2% of all of the statements made to the children by their mothers were time statements. These means that the majority of the high risk children in this sample of children were not hearing time statements at all.

Of those children hearing time statements, we found a statistically significant correlation between physical time statements and children's score on seriation. In other words, children whose mothers talked to them more about physical time ranked higher on seriation. However, most of our mothers who did talk about time primarily spoke about social time. Physical time concepts were absent.

This means that the children probably do not hear such statements as "Eat your lunch, then you can see your T.V. program at 1:00 o clock." This kind of physical time statement cues a child to order his/her behavior in the present to bring about a desired activity in the future. The child translates the statement, "Eat the peanut butter real fast, so I can watch T.V." This ability to translate time language to behavior is vital to children when they enter the time-slotted world of formal education, and many of the children I am studying have had no opportunity to develop it.

Picture these children entering such a world from households with caretakers often too anxious and too needy to provide the alternating patterns of give and take, mentioned earlier as necessary foundations for a time sense. Picture children from households so crowded with adults and other children that they wander through a welter of people as little non-persons, spoken to only if they get in the way...when we are discovering that language is so important to the development of a time sense. Picture children from these households of unemployed young parents who have little reason to observe time, and thus do not address their children about social or physical time, or about the past, and least of all about the future.

When these children come to school, they enter a world that was not created for them, and that does not build upon their known skills. Imagine yourself in a classroom with adults who speak your language, yet you are unable to interpret what they want you to do, even though you may wish to please them. When you get up to look at the goldfish, you are asked to sit down, finish your coloring and wait to see the gold fish during free play. When you sit down to color, they take the paper away before you finish, because it's time for juice. It is difficult to put the logic of this together if you are just four years old, and have not encountered such time distinctions before. You do not know how to govern your behavior by time, and you are robbed of the joy of the sense of efficacy and control so necessary to continue to learn. Confusion may turn the "wish to please" to withdrawal, frustration or outright rebellion. Teachers observe this behavior, and unaware of the dynamics of the children's lives, (like understanding why they can't do stairs) make predictions about their abilities, and even worse, peg them for the EMH (or Educationally Mentally Handicapped) group.

This is a much more costly label in terms of the child's future, than mistaken judgement on the ability "do stairs"... but one which springs from

the same source: families of all types and in all cultures can only teach that which is known, and thought to be needed, in their view of the world.

Several researchers are now beginning to turn their attention to examining the sense of time children bring to school. For example, an Israeli psychologist, Ben-Baruch, viewing Israel as a multi-ethnic, multicultural society much like the United States, has been conducting studies there on time and in other countries including the United States. Hypothesizing that the time conceptions children bring to school can be very different from that of the school in pluralistic societies, he is finding that when the time perspective of the student and the school differs, school achievement is low (Ben-Baruch, 1985).

Although the use of time is but one small feature of a child's life, it does illustrate the subtle complexities facing our educational processes in the inner city. The findings on time in this study, although preliminary, may have implications for curriculum changes. Perhaps early classrooms should have a less time oriented curriculum with few or no time slots in the earliest years. This could give children time to finish projects, to gradually learn the meaning of time, and how to order their classroom behavior to it. If the development of a time sense is primarily a cognitive construction, highly dependent on environmental circumstances, daily experiences and deliberate teaching, teachers can help the children accomplish that development (Campbell, 1986). We need to understand the context of varying early environmental experiences children bring to school if we are to adjust curriculum to serve them better.

The next step in our research is to evaluate and "ground" our findings by going to the sites, working with parents and children, sharing our information, obtaining their responses. Such sites include schools and early parent-child support programs. We have already begun this process with the Center for Successful Child Development (CSCD), commonly known as the Beethoven Project, a neighborhood based program located in one of the Chicago Housing projects. CSCD personnel thought the research findings were valid, noting that their Family Home Visitors were concerned by the lack of routine, structure and control in the young parents' homes. We have agreed to collaborate with them, integrating their experiential knowledge and our research knowledge in the development of a Time Development component as a part of their regular program. The program goals will foster

those patterns of parent-child interaction and linguistic communication that help parents to understand young children's need for some routine, predictability related to time, and it will empower and encourage parents to think and speak in terms of the linear time of past, present and future, not only to give children a sense of time, but also to use their behavior to control and plan for desired outcomes in the future.

Earlier I commented that you take time for granted because it governs so much of your life. Perhaps even now you are glancing at your watches to see if I am nearly finished. You are beginning to think about your next move in order to put yourself in the optimum position to facilitate your plans for the early afternoon. Time is a part of you. You control your life through your conception of it. It is that control that I wish for all of our children. The control to learn "stairs" as well as "time."

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